

ACCESSION #: 9510310141

LICENSEE EVENT REPORT (LER)

FACILITY NAME: LaSalle County Station Unit One PAGE: 1 OF 4

DOCKET NUMBER: 0500373

TITLE: Unit One Manual Reactor Scram due to Emergency Governor

Lockout Valve Sticking

EVENT DATE: 09/24/95 LER #: 95-016-00 REPORT DATE: 10/24/95

OTHER FACILITIES INVOLVED: None DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Steven Wix, System Engineer TELEPHONE: (815) 357-6761

x 2571

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: YES EXPECTED: 3/15/95

ABSTRACT:

At 0400 hours on September 24, 1995, Unit 1 was in Operational Condition 1 (Run) and at 100% power. Surveillance LOS-FW-SR1, "Turbine Feedwater Pump Surveillance", had begun on the 1B Turbine Driven Reactor Feed Pump(TDRFP). The 1B emergency governor hand switch was taken to the locked out position. When the "trip test" push-button was depressed the 1B TDRFP unexpectedly tripped out and reactor water level started to decrease. In response to this the Unit NSO began to manually start the 1C Motor Driven Reactor Feed Pump (MDRFP), while a third operator began reducing

reactor recirculation flow via the flow control valves.

Reactor level began to recover and during this recovery the 1B TDRFP unexpectedly returned to operation. With the three feed pumps feeding reactor level, the 55.5 inch High Reactor Water Level/Main Turbine Trip was quickly reached. The control room operators initiated a manual scram just before an automatic scram would have occurred due to the turbine trip. All systems functioned as expected and the reactor safely shutdown.

The source of the failure was determined to be the emergency governor lockout valve sticking. A specific root cause for this failure could not be determined but the probable cause was foreign material intrusion from the turbine lube oil system.

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

A. CONDITION PRIOR TO EVENT

Unit(s): 1 Event Date: 9/24/95 Event Time: 0408 Hours

Reactor Mode(s): 1 Modes(s) Name: Run Power Level(s) 100%

B. DESCRIPTION OF EVENT

At 0400 hrs on September 24, 1995, Unit 1 was in Operational

Condition 1 (Run) and at 100% power. Surveillance LOS-FW-SR1

"Turbine Feedwater Pump Surveillance", had been performed

successfully on the 1A Turbine Driven Reactor Feed Pump

(TDRFP,FW)(SJ) and had begun on the 1B TDRFP. The 1B TDRFP thrust

bearing checks portion of LOS-FW-SR1 were completed satisfactory and

the emergency governor lockout testing commenced. The 1B TDRFP

emergency governor handswitch was taken to the "locked out" position

and held while checks were performed for the proper indications at the control room panel. All indications were "as required" and the "trip test" push-button was then depressed. Unexpectedly the 1B TDRFP flow indication dropped to zero and the "Trip" light went on indicating that the TDRFP actually tripped. The Unit Assist Nuclear Station Operator(NSO) realizing that a failure in the trip bypass had occurred, made multiple attempts to reset the 1B TDRFP. Reactor water level started to decrease. In response to this, the Unit NSO manually started the 1C Motor Driven Reactor Feed Pump(MDRFP) while a third operator reduced reactor recirculation flow via the flow control valves. Preparation for manually scrambling the unit prior to reaching the Low Level trip was initiated but was aborted as vessel level began to increase. A reactor "Low Level" scram was avoided by these actions.

The 1B TDRFP, while still in manual mode, unexpectedly returned to operation and began adding to the reactor water inventory. The reactor recirculation pumps downshifted from fast to slow speed and with the three feed pumps feeding reactor level, the 55.5 inch High Reactor Water Level/Main Turbine Trip was quickly reached. A manual reactor scram was initiated after the Reactor High Water Level 55.5 inch trip (Loss of Main Turbine)occurred. All feedwater pumps (1A and B TDRFP and 1C MDRFP) tripped off as required. All systems functioned as expected and reactor shutdown and recovery was

completed satisfactorily.

A formal root cause was performed to determine the problem(s) that may have caused the failure of the emergency governor lockout trip test.

This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)

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C. CAUSE OF EVENT

Testing began with a non-intrusive inspection to determine if any problems existed prior to disassembly. This included electrical testing on selected relay solenoids, pressure switch calibration verification, oil analysis, and a visual inspection of control linkages and components. Complete disassembly of the front standard then began and the only irregularity found was that the emergency governor lockout valve was binding in its cylinder. The lockout valve cylinder was lightly honed for removal of small burrs, a new valve spool was installed and tested for freedom of movement (rotation and stroke), and then the 1B TDRFP was reassembled.

During subsequent feedwater pump testing, the emergency governor trip test was completed satisfactorily but the TDRFP failed to trip from the control room when the turbine trip push button was depressed. This failure indicated a possible problem at the trip dump valve assembly.

The feedpump was taken out of service (OOS) and a detailed component

inspection and analysis of foreign material performed. No specific root cause for the failure could be found, but it was determined that the trip dump valve bound mechanically with a particle or particles within the trip dump valve assembly. By design, a large amount of oil passes through this pathway, therefore when the trip dump valve movement was freed and this component was inspected no particulate matter was found.

The probable root cause has been determined to be foreign material from the Turbine Lube Oil system (TO) (TD). Testing of lube oil samples taken from the affected components of the hydraulic control system have indicated that a crud burst of material may have been carried to the hydraulic controls during the change from the Auxiliary motor driven oil pump to the Main Turbine Main Shaft Oil Pump (MSOP) when the main turbine is initially brought on line. We are currently evaluating the installation of an in-line filter for the control oil system

D. ASSESSMENT OF SAFETY CONSEQUENCES

The safety consequences of this event were minimal and all Engineered Safety Feature (ESF) actuations occurred as designed during this event. The potential for loss of feedwater control and increase in reactor level with the reactor at 100.0% power is an analyzed condition of moderate frequency (Updated Final Safety Analysis Report, Section 15.1.2A, "Loss of Feedwater Controller

Failure Maximum Demand"). If a TDRFP mechanical trip mechanism fails to close the TDRFP stop valves, the TDRFP speed control system will close the control valves on a reactor vessel level 8 trip signal. This control valve closure will stop TDRFP flow to the reactor pressure vessel(RPV). A manual reactor scram was initiated after the Reactor High Water Level 55.5 inch trip (Loss of Main Turbine)and all feedwater pumps (1A and B TDRFP and 1C MDRFP) tripped off as required. The reactor was safely shut down and recovery performed without incident.

E. CORRECTIVE ACTIONS

The 1B TDRFP was isolated and taken out of service to determine the cause of the emergency governor lockout valve sticking. Oil samples were taken of the supply oil (Turbine Lube Oil System) for the 1A and 1B TDRFP for analysis and the results were found within the required GE specifications. The 1A TDRFP control filters were inspected for any similar problems due to the common oil system and multiple tests(LOS-FW-SR1, "Turbine Feedwater Pump Surveillance" and LOS-BO-SR2, "Operability of Main turbine Support Systems and Turbine Driven Reactor Feedpump Trip Solenoids") of the system was performed. Additional areas checked included: electrical connections, pressure switch calibrations, linkage connections and freedom of movement. All were found satisfactory.

The addition of in-line filtering system for the TDRFP oil system will be evaluated. A supplement to this Licensee Event Report will be submitted upon completion of this evaluation.

F. PREVIOUS OCCURRENCES

LER Number Title

DVR #01-02-90-056 2B TDRFP failure to trip

373/94-10-00 Scram due to Reactor Level

Control System Loss to 1B Turbine

Driven Reactor Feed Pump

373/94-11-00 U-1 Scram due to a Feedwater

Signal Spike

G. COMPONENT FAILURE DATA

Since no component failure occurred, this section is not applicable

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Commonwealth Edison Company

LaSalle Generating Station

2601 North 21st Road

Marseilles, IL, 61341-9757

Tel 815-357-6761

ComEd

October 24, 1995

U.S. Nuclear Regulatory Commission

Attention: Document Control Desk

Washington, D.C. 20555

Licensee Event Report #95-016-00, Docket #050-373 is being submitted to
your office in accordance with 10CFR50.73(a)(2)(iv).

Sincerely,

D. J. Ray

Station Manager

LaSalle County Station

DJR/SW/lja

Enclosure

cc: H. J. Miller, NRC Region III Administrator

P. G. Brochman, NRC Senior Resident Inspector

R. J. Zuffa, IDNS Resident Inspector

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INPO - Records Center

D. L. Farrar, Nuclear Regulatory Services Manager

A Unicom Company

*** END OF DOCUMENT ***
